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REVIEW ARTICLE

Association of Directors of Anatomic and Surgical Pathology

Recommendations for the reporting of tissues removed as part of the surgical treatment of cutaneous melanoma

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Abstract The Association of Directors of Anatomic and Surgical Pathology have developed recommendations for the surgical pathology report for common malignant tumors. The recommendations for cutaneous melanoma are reported herein.

Key words Malignant melanoma · Skin

Introduction

The Association of Directors of Anatomic and Surgical Pathology (ADASP) has named several committees to develop recommendations regarding the content of the surgical pathology report for common malignant tumors. A committee of individuals with special interest and expertise write the recommendations, and they are reviewed and approved by the council of ADASP and subsequently by the entire membership.

The recommendations have been divided into the following four major areas: (1) items that provide an informative gross description; (2) additional diagnostic features that it is recommended are included in every report if possible; (3) optional features that may be included in the final report; and (4) a checklist.

The purpose of these recommendations is to provide an informative report for the clinician. The recommendations are intended as suggestions, and adherence to them is completely voluntary. in special clinical circumstances, the recommendations may not be applicable. The recommendations are intended as an educational resource rather than a mandate.

This report was prepared by an ad hoc committee composed of Alistair J. Cochran (Chair), Christiane Bailly, Martin Cook, Kerry Crotty, Martin Mihm, Walter Mooi, and Richard Sagebiel

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Features the Association recommends are included in the final report

Surgical pathology reports for excised or biopsied melanomas of the skin should incorporate the following information.

A. General

1. How the specimen was identified: labeled with name, medical record number, etc.
2. How the specimen was received: fresh, in fixative, etc.
3. The exact anatomic site of the tumour.
4. The type of surgical procedure: excision or re-excision, incision biopsy, punch biopsy, shave biopsy, curettage, other.

B. Gross specimen

1. Dimensions of the specimen (length × width × thickness or, in the case of small biopsies and punch biopsies, maximum diameter×thickness).
2. Measurements and description of the pigmented lesion:
   (a) Length × width of pigmented lesion. Is the edge of the lesion regular or irregular?
   (b) Maximum diameter of dominant nodule (as opposed to dominant nodule plus radial growth phase).[1]
   (c) Ulceration or intactness of skin over dominant nodule.

[1] The radial growth phase is the usually flat pigmentary abnormality that lies peripheral to the vertical growth phase (invasive component) of most primary melanomas

(d) Description of any other pigmented lesions that may be present in the specimen (diameter, elevated or flat, color(s) - uniform or variegated, ulcerated or not, edge regular or irregular).
(e) Measurement and position of additional pigmented lesion(s) relative to the dominant lesion and the nearest excision margin.
(f) Description of any other lesions present (e.g. scars, areas of vitiligo).
(g) Measurement of the minimum distance between the edge of the dominant lesion or radial growth phase (whichever is appropriate) and the nearest surgical margin (minimum clearance).

C. Microscopic evaluation[2]

1. When possible, state whether the lesion is primary, locally recurrent or metastatic to the site. If the lesion is not primary, but lies in the dermis/subcutis in the area of the primary is it:
   a) persistent melanoma in continuity with the primary tumor or a local scar.
   b) a satellite not in continuity with the primary tumor or a local scar.[3]
2. State whether there is microscopic evidence of ulceration[4] If there is, measure the width of ulceration with an ocular micrometer.
3. State the histogenetic type of tumor [6], This requires consideration of the gross appearance and clinical information concerning patient age, lesional site and duration and any history of dysplastic nevi. This information is required for treatment planning and epidemological studies.
4. Measure the thickness of the invasive component of the tumor in millimeters and tenths of millimeters, using an ocular micrometer as described by Breslow [2]. The tumor is measured from the granular layer of the epidermis (or where appropriate the base of an ulcer to the deepest contiguous tumor cell (excluding tumor sheathing skin appendages).[5]
5. When possible, assess the depth of penetration of the dermis relative to standard anatomic landmarks [3].
6. Assess the frequency of mitotic figures per square millimeter in the vertical growth phase (invasive nodule), if present. This is a prognostically important observation [4].
7. Record whether there is obvious evidence of invasion of dermal blood vessels or lymphatics. Immunohistochemical confirmation of this using the agglutinin of *Ulex europaeus* or antibody to factor VIII is optional [7].
8. Record desmoplasia or stromal myxoid change [1] if present.
9. Report neurotropism, if present.
10. Report whether melanoma (invasive or radial growth phase) is present at or close to the peripheral or deep "surgical" margin and record (using a micrometer) the minimum distance in millimeters between the tumor nearest the margin and the peripheral and deep margins.
11. Record whether there is evidence of regression subjacent to the radial growth phase or within the vertical growth phase. Regressive changes comprise foci of

[2] Microscopically, a radial growth phase shows an increase in variably atypical melanocytes, singly or in small colonies, in a basal or suprabasal position, with or without the presence of single melanoma cells in the upper papillary dermis
[3] If the lesion is non-primary, items C2 3,4,5, 7 and 8 are not relevant
[4] It is useful to attempt to separate ulceration that is post traumatic, i.e., secondary to a shave or punch biopsy or self-inflicted damage from ulceration that is "nontraumatic" or "spontaneous." This requires detailed clinical information and correlation
[5] It is now common to include satellites in the Breslow measurement, although some writers make an argument against their inclusion. If microsatellites are included in this measurement, it is important to record that the measurement has been made in this way

Table 1 Cutaneous melanoma checklist

1. Site . . . . .
2. Procedure (circle one):
   Excision
   Incision biopsy (including punch)
   Shave biopsy
   Other (specify)
3. Lesion is confirmed as primary: Yes No
4. Ulceration No ulceration
5. Histogenetic pattern[a]
   a) Malignant melanoma, no adjacent component (AC) (nodular)
   b) With AC, superficial spreading melanoma type
   c) With AC, lentigo maligna type
   d) With AC, acral lentiginous type
   e) Desmoplastic
   f) Of the type that simulates, Spitz, nevocytic nevus, other lesions
   g) Unclassifiable
6. Clark level I: II: III: IV: V.
7. Breslow thickness, _____ · _____ mm.
8. Mitotic rate: _____ per sq. mm.
9. Regressive fibrosis present (circle one): Yes No
10. Excision (circle one):
    Complete
    Not complete peripherally (indicate affected margin)
    Not complete in depth
    Not complete peripherally and in depth
11. Vascular invasion (circle one):
    Absent
    Blood vessels
    Lymphatic vessels
    Blood and lymphatic vessels
12. Microstellites (circle one) Present Absent:
13. Neurotrophism (circle one) Present Absent:
14. Lymph node involvement (complete as appropriate):
    No. of nodes containing tumor/total no. of nodes, _____/_____
    Not applicable

[a] We have not included mucosal lentiginous melanoma as this document refers to cutaneous melanoma

fibrosis that are variably cellular and variably infiltrated by lymphoid cells and macrophages and that are not due to prior surgical intervention.

D. Optional features

1. Record the degree of pigmentation. (All kinds of melanoma may be amelanotic, so that absence of pigment does not constitute a histogenetic subclass.)
2. If a radial growth phase is present, state whether it is pagetoid, lentiginous or unclassifiable.
3. Dominant cell type: epithelioid (round-oval) vs spindle (elongated) vs spitzoid vs nevocytoid vs balloon vs other. List other cell types that are present.
4. Record whether there is a nevus contiguous to the melanoma. Is this adjacent or subjacent to the melanoma? Record the type of nevus (common congenital vs common acquired vs dysplastic vs Spitz vs blue vs cellular blue vs combined nevus.
5. Record the density and distribution of any lymphoreticular cell infiltrate that is present:
   a) Within the vertical growth phase (invasive component) and disrupting nests of melanoma cells (intra-tumor).
   b) Peripheral to the invasive component as a band-like infiltrate.
6. Record whether necrosis is present:
   a) Multicellular
   b) Apoptosis
7. Record presence of unusual features, such as heterologous elements, e.g., bone, cartilage.

Pathology report on resected lymph nodes

Mandatory

1. State the site of origin of the nodes and side of the body from which they derive.
2. State the number of lymph nodes present.
3. State the number of nodes found to contain tumor on histologic and (if appropriate) immunohistologic examination.

Optional

4. Indicate whether the tumor present is micrometastatic or massively replaces the node (s) [5].
5. State if there is evidence of extracapsular extension [5].
6. Describe the histology/cytology of the nodal tumor. This description should include, but need not be confined to, cell type, extent of melanization, mitoses/mm^2 and% necrosis.

Table 1 shows a protocol for reporting primary melanoma.

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